

TECHNICAL REVIEW DOCUMENT
For
RENEWAL TO OPERATING PERMIT 98OPAL203

Public Service Company of Colorado – Alamosa Combustion Turbines
Alamosa County
Source ID 0030007

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April 2013
Revised June and July 2013

Reviewed by:

Operating Permit Supervisor:
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I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The current Operating Permit was issued May 1, 2009. The expiration date for the permit is May 1, 2014. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted April 2, 2013, comments on the draft permit and technical review document received on July 22, 2013, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at www.colorado.gov/cdphe/airTitleV. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

This facility is classified as an electric services facility under the Standard Industrial Classification 4911. This facility is an unmanned electric power generating station that

consists of 2 simple cycle combustion turbines that can generate up to 20 MW of power. Typically this facility is used to service peak electrical load demands. The turbines are capable of burning natural gas, Nos. 1 and/or 2 fuel oil or combination. There are also two diesel fuel-fired internal combustion engines that are used to startup the turbines.

Note that neither turbine is equipped with a control device, so the Compliance Assurance Monitoring (CAM) requirements do not apply to these units.

The facility is located near the town of Alamosa in Alamosa County in an area designated as attainment for all criteria pollutants.

New Mexico is an affected state within 50 miles of the plant. The following Federal Class I designated areas are within 100 kilometers of the plant: The Great Sand Dunes National Park and the La Garita and Weminuche National Wilderness Areas.

The summary of emissions that was presented in the Technical Review Document (TRD) for the previous renewal permit issuance has been modified to update actual emissions. Potential to emit is shown in the table below:

Potential to Emit (tons/yr)						
	Natural Gas			Distillate (Nos. 1 and/or 2) Fuel Oil		
	Turbine 1	Turbine 2	Total	Turbine 1	Turbine 2	Total
PM ¹	51	122.5	173.5	51	122.5	173.5
PM ₁₀ ²	51	122.5	173.5	51	122.5	173.5
SO ₂ ³	1,224.65	1,224.65	2,339.30	1,224.65	1,224.65	2,339.30
NO _x	362.5	362.5	725	898.1	898.1	1,796.2
CO	92.9	92.9	185.8	3.4	3.4	6.8
VOC	2.4	2.4	4.8	0.4	0.4	0.8
Pb ⁴	N/A	N/A	N/A	0.0143	0.0143	0.0286
Total HAPS	See Table on Page 9		2.09	See Table on Page 9		2.40
Highest Single HAP ⁵			1.45			1.61

¹PTE, when burning any fuel, is based on the following: for turbine 1 the permitted PM limit of 51 tpy and for turbine 2 the PM limit (0.12 lbs/mmBtu) x design heat rate x 8760 hrs/yr.

²PM₁₀ was presumed to equal PM

³PTE, when burning any fuel, for both turbines is based on the Reg 1 SO₂ limit (1.2 lbs/mmBtu) x design heat rate x 8760 hrs/yr.

⁴Lead (Pb) emissions are based on emission factors from AP-42, Section 3.1 (dated 4/00), Table 3.1-5

⁵Highest single HAP is formaldehyde for natural gas and manganese for distillate oil.

Potential to emit for the turbines are based on the information identified in the above table and the maximum hourly fuel consumption rate, the emission factors listed in the permit (AP-42) and 8760 hrs/yr of operation.

In the above table for potential to emit, the breakdown of HAP emissions by fuel burned and individual HAPs is provided on page 9 of this document. HAP emissions are based

on the maximum hourly fuel consumption rate, 8760 hrs/yr of operation and AP-42 emission factors (Section 3.1, dated 4/00, Tables 3.1-3 and 3.1-4).

Actual emissions are based on APENs submitted on April 30, 2012 (2011 data) and are shown in the table below.

Actual Emissions (tons/yr)						
	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
T001	0.09	0.09	0.23	15.98	3.98	0.10
T002	0.10	0.10	0.22	17.00	4.26	0.11
Total	0.19	0.19	0.45	32.98	8.24	0.21

National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories

As indicated in the above table summarizing potential to emit, the facility is not a major source for HAPS and is an area source (minor source) for HAPs. As indicated in the technical review document to support the second renewal permit (issued May 1, 2009), EPA has been promulgating NESHAPs (also referred to as “MACT requirements”) for area sources, and those requirements that could potentially apply to this facility are discussed below.

Paint Stripping and Miscellaneous Surface Coating at Area Sources (40 CFR Part 63 Subpart HHHHHH)

As indicated in the technical review document to support the second renewal (issued May 1, 2009), the Division considers that any spray coatings of motor vehicles and mobile equipment and spray application of coatings that contain the target HAP at this facility would meet the definition of facility maintenance. The source indicated that none of the paint stripping chemicals used at the facility contain methylene chloride; therefore, the provisions in 40 CFR Part 63 Subpart HHHHHH do not apply.

Reciprocating Internal Combustion Engines (40 CFR Part 63 Subpart ZZZZ)

The reciprocating internal combustion engine (RICE) MACT was signed as final on February 26, 2004 and was published in the Federal Register on June 15, 2004. Under this rulemaking only RICE that were > 500 hp and located at major sources of HAPS were subject to the requirements. Subsequent revisions were made to the RICE MACT to address new engines ≤ 500 hp located at major sources and new engines of all sizes at area sources (final revisions published January 18, 2008), existing compression ignition engines ≤ 500 hp at major sources and all sizes at area sources (final revisions published March 3, 2010) and existing spark ignition engines ≤ 500 hp at major sources and all sizes at area sources (final revisions published August 20, 2010). Revisions were made on January 30, 2013 and these revisions primarily changed the

requirements for engines greater than 500 hp located at area sources and the operating requirements for emergency engines.

There are two engines included in the insignificant activity list. These engines qualify as “black start” engines and are subject to requirements in the RICE MACT. Black start engines are defined in 40 CFR Part 63 Subpart ZZZZ § 63.6675 as “an engine whose only purpose is to start up a combustion turbine”. The appropriate requirements in 40 CFR Part 63 Subpart ZZZZ for these engines will be included in the renewal permit.

Industrial, Commercial and Institutional Boilers located at Area Sources (40 CFR Part 63 Subpart JJJJJJ)

Unlike the NESHAP for major sources (40 CFR Part 63 Subpart DDDDD), these requirements only apply to boilers, not process heaters. There is no boilers located at this facility, therefore the requirements in 40 CFR Part 63 Subpart JJJJJJ do not apply.

New Source Performance Standards (NSPS)

EPA has promulgated NSPS requirements for new source categories since the issuance of the second renewal permit for this facility. NSPS requirements generally only apply to new or modified equipment and the Division is not aware of any modifications to existing equipment or additions of new equipment that would render equipment at this facility subject to NSPS requirements. However, because the recently promulgated NSPS requirements address equipment that may not be subject to APEN reporting or minor source construction permit requirements, the applicability of some of the newly promulgated requirements are being addressed here.

NSPS Subpart JJJJ – Stationary Spark Ignition Engines

NSPS Subpart JJJJ applies to stationary spark ignition engines that commenced construction, reconstruction or modification after June 12, 2006 and were manufactured after specified dates. The date the engine commenced construction is the date the engine was ordered by the owner/operator. There are no stationary spark ignition engines located at this facility. Therefore, the requirements in NSPS Subpart JJJJ do not apply.

NSPS Subpart IIII – Stationary Compression Ignition Engines

NSPS Subpart IIII applies to stationary compression ignition engines that commenced construction, reconstruction or modification after July 11, 2005 and were manufactured after specified dates. The date the engine commenced construction is the date the engine was ordered by the owner/operator. The two diesel-fuel fired engines used to start the combustion turbines have been in the Title V permit for this facility since initial issuance (April 1, 1999), therefore the engines clearly commenced construction prior to July 11, 2005 and the requirements in NSPS Subpart IIII do not apply.

Compliance Assurance Monitoring (CAM) Requirements

As discussed in the technical review document for both the first and second renewals, because neither turbine is equipped with a control device the Compliance Assurance Monitoring (CAM) requirements do not apply to these units.

Greenhouse Gas Emissions

The potential-to-emit of greenhouse gas (GHG) emissions from this facility is greater than 100,000 TPY CO₂e. Future modifications greater than 75,000 tons per year CO₂e may be subject to regulation (Regulation No. 3, Part A, I.B.44).

Repealed APEN Exemptions

Since the second Title V renewal permit was processed (issued May 1, 2009) the APEN exemptions for engines – limited size and hours (Reg 3, Part A, Section II.D.1.sss) and emergency generators – limited size and hours (Reg 3, Part A, Section II.D.1.ttt) was repealed. Although the specific APEN exemptions for engines and emergency generators have been repealed, engines and emergency generators are still exempt from APEN reporting requirements if actual, uncontrolled emissions are below the APEN de minimis level. The two black start engines located at this facility have actual uncontrolled emissions below the APEN de minimis level of 2 tons/yr, so these engines are still considered APEN exempt. Note that since the black start engines are subject to requirements in 40 CFR Part 63 Subpart ZZZZ they can no longer be considered an insignificant activity, so they will be removed from the insignificant activity list and included in Section II of the permit.

III. Discussion of Modifications Made

Source Requested Modifications

The source's requested modifications were addressed as follows:

April 2, 2013 Renewal Application

Page following cover page

The source requested that the permit contact and responsible official be revised. The changes have been made as requested.

Other Modifications

In addition to the source requested modifications, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments to the Alamosa Combustion Turbines Renewal Operating Permit. These changes are as follows:

Page Following Cover Page

- Monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).
- The address was revised under “issued to”.

Section I – General Activities and Summary

- Revised the description in Condition 1.1 to remove Wheeler Peak National Wilderness Area as a federal class I area within 100 km of the facility since Wheeler Peak is not within 100 km of the facility.
- The two black start engines were included in the description in Condition 1.1.
- Condition 1.4 was revised to remove Section IV, Condition 3.d as a state-only requirement, since EPA approved these provisions into Colorado’s SIP effective October 6, 2008.
- The following changes were made to the table in Condition 6.1:
 - Combined the emission unit no. and facility id columns.
 - The second column was labeled AIRS point number as that is more appropriate.
 - The black start engines no longer qualify as insignificant activities and have been included in the table.

Section II.2 – Turbines Burning Fuel Oil

- Revised the language in Condition 2.6 to specify that the Method 9 observation shall be made once per calendar year to clarify the annual period and to specify that if fuel oil is not used during the calendar year, a Method 9 observation is not necessary.

“New” Section II.4 – Diesel Fired Engines used to Startup Turbines

There are two engines included in the insignificant activity list that were considered insignificant activities under the provisions in Colorado Regulation No. 3, Part C, Section xxx (stationary internal combustion engines). However, under the “catch-all”

provisions in Regulation No. 3, Part C, Section II.E, sources that are subject to any federal or state applicable requirement, such as National Emission Standards for Hazardous Air Pollutants (NESHAPs), may not be considered insignificant activities.

As discussed previously in this document, the turbine startup engines are subject to the RICE MACT and can no longer be considered insignificant activities. Although these engines cannot be considered insignificant activities, the Division has not adopted revisions to the RICE MACT promulgated after July 1, 2007, so the engines are still exempt from APEN reporting and minor source construction permit requirements provided actual uncontrolled emissions are less than the APEN de minimis level (2 ton/yr). The turbine startup engines will be included in “new” Section II.4 of the permit.

Engine descriptions are as follows:

Detroit Diesel, Model No. 12V-71-NT, Diesel Fuel-Fired Engines, Each Rated at 600 hp. Serial Nos. not available. These engines are used to start up the turbines.

The appropriate applicable requirements for these engines are as follows:

- Except as provided for below, visible emissions shall not exceed 20% opacity (Reg 1, Section II.A.1)
- Visible emissions shall not exceed 30% opacity, for a period or periods aggregating more than six (6) minutes in any sixty (60) minute period, during fire building, cleaning of fire boxes, soot blowing, start-up, process modifications, or adjustment or occasional cleaning of control equipment (Reg 1, Section II.A.4)

Based on engineering judgment, the Division believes that the operational activities of fire building, cleaning of fire boxes and soot blowing do not apply to diesel engines. In addition, since these engines are not equipped with control equipment the operational activities of adjustment or occasional cleaning of control equipment do not apply to these engines. Finally, based on engineering judgment, it is unlikely that process modifications will occur with these startup engines. Therefore, for these units the 30% opacity provision only applies during startup. The 20% opacity requirement (noted in the above bullet) applies at all other times. Note 40 CFR Part 63 Subpart ZZZZ (table 2c, item 1 and § 63.6625(h)) specifies that startup shall not exceed 30 minutes

In their July 22, 2013 comments on the draft permit and technical review document, the source indicated that operation of the black start engines, typically takes less than 5 minutes and that these engines are not routinely testing like emergency engines typically are. Therefore, the source requested that the 20% opacity requirement be removed. The Division considers that the opacity requirement still applies; however, it is not the intent of the Division to require that equipment be started for the sole purposes of verifying compliance with the opacity limitation. Therefore, the monitoring requirements have been revised to

specify that an opacity observation be conducted on these engines if they operate for more than 60 continuous minutes.

- SO₂ emission shall not exceed 1.5 lbs/mmBtu (Reg 1, Section VI.A.3.b.(i)).
- 40 CFR Part 63 Subpart ZZZZ requirements

Since these engines meet the definition of black start in § 63.6675, they are only subject to management practices (oil and filter change, inspect air cleaner and inspect hoses and belts)

- 40 CFR Part 63 Subpart A requirements

Since these engines are not subject to any emission limitations, monitoring requirements, notification and reporting requirements the requirements in §§ 63.7, 63.8, 63.9 and 63.10 do not apply. In addition, since these engines are existing the requirement in § 63.5 (preconstruction review and notification requirements) does not apply. Finally, Table 8 of Subpart ZZZZ indicates that operation and maintenance requirements in 63.6(e) do not apply. Therefore, the permit will only include the prohibition and circumvention requirements in § 63.4.

Since these units are not subject to APEN reporting or minor source construction permit requirements, the permit will not include any requirements for calculating emissions.

Compliance with the opacity limit shall be monitored by conducting a Method 9 observation annually to monitor compliance with the 20% opacity requirement. If an engine operates for 250 hours in a calendar year, another Method 9 observation will be required for that engine. Since periods of startup are limited to 30 minutes a Method 9 observation to monitor compliance with the 30% opacity requirement will not be required.

Section IV – General Conditions

- A version date was added.
- The paragraph in Condition 3.d indicating that the requirements are state-only has been removed, since EPA approved these provisions into Colorado's SIP effective October 6, 2008.
- The title for Condition 6 was changed from "Emission Standards for Asbestos" to "Emission Controls for Asbestos" and in the text the phrase "emission standards for asbestos" was changed to "asbestos control".
- Condition 29 (VOC) was revised primarily to add the provisions in Reg 7, Section III.C as paragraph e although other minor language and format changes were made.

Appendices

- Language was added to the insignificant activity list in Appendix A to indicate those insignificant activity categories for which records should be available to verify insignificant activity status.
- The two black start engines were removed from the insignificant activity list in Appendix A and are included in Section II of the permit.
- Revised the reports in Appendices B and C to include the full company name (i.e., “Public Service Company of Colorado”, rather than “Public Service Company”).
- The two black start engines were included in the tables in Appendices B and C.
- Changed the name of the Division contact for reports in Appendix D.

Hazardous Air Pollutant Emissions

AP-42 Emission Factors¹

Pollutant	Natural Gas		Distillate Fuel	
	Emission Factor (lb/mmBtu)	Emissions ² (tons/yr)	Emission Factor (lb/mmBtu)	Emissions ² (tons/yr)
Acetaldehyde	4.00E-05	8.16E-02		
Acrolein	6.40E-06	1.31E-02		
Benzene	1.20E-05	2.45E-02	5.50E-05	1.12E-01
Ethylbenzene	3.20E-05	6.53E-02		
Formaldehyde	7.10E-04	1.45E-00	2.80E-04	5.72E-01
Naphthalene			3.50E-05	7.14E-02
Propylene Oxide	2.90E-05	5.92E-02		
Toluene	1.30E-04	2.65E-01		
Xylenes	6.40E-05	1.31E-01		
Manganese			7.90E-04	1.61E-00
Lead			1.40E-05	2.86E-02
Total		2.09E-00		2.40E-00

¹from AP-42, Section 3.1 (dated 4/00), Tables 3.1-3 and 3.1-4

²Emissions are from both turbines combined